

CLAIMS

What is claimed is:

1. A network node comprising:
 - 5 an input module operable to receive an original scalable bit stream having an original bandwidth range;
 - a transcaling module operable to generate a new scalable bit stream having a new bandwidth range, wherein the new bandwidth range corresponds to a range of bandwidth that is different from that of the original bandwidth range at least in
 - 10 that it has a new minimum bit rate that is different from an original minimum bit rate of the original bandwidth range; and
 - an output module operable to transmit said new scalable bit stream downstream.
- 15 2. The network node of claim 1, wherein said transcaling module comprises a decoder operable to decode at least a portion of the original scalable bit stream.
3. The network node of claim 2, wherein the original scalable bit stream has an original base layer and an original enhancement layer, and said decoder is operable
- 20 to generate a first new enhancement layer and a second new enhancement layer by decoding a portion of the original enhancement layer, said transcaling module comprising a motion vector extraction module operable to extract motion vectors from the original base layer and operable to predict a next portion of said first new enhancement layer using the extracted original motion vectors.
- 25 4. The network node of claim 2, wherein the original scalable bit stream has an original base layer and an original enhancement layer, and said decoder is operable to generate a first new enhancement layer and a second new enhancement layer by decoding a portion of the original enhancement layer, said transcaling module
- 30 comprising a motion vector generation module operable to predict a next portion of said first new enhancement layer by generating motion vectors for the first new enhancement layer.

5 5. The network node of claim 2, wherein the original scalable bit stream has a base layer and an enhancement layer, and said decoder is operable to reconstruct original media by decoding the base layer and the enhancement layer, the network node comprising an encoder operable to produce the new scalable bit stream by encoding the reconstructed media.

10 6. The network node of claim 1 comprising a processing power evaluation module operable to evaluate an amount of processing power available to said transcaling module.

15 7. The network node of claim 6, wherein said transcaling module is operable to generate the new scalable bit stream having the new bandwidth range based on the amount of available processing power.

 8. The network node of claim 6, wherein said output module is operable to transmit the original scalable bit stream downstream if the amount available processing power is low.

20 9. The network node of claim 1 comprising a link evaluation module operable to evaluate bandwidth of links to downstream devices.

25 10. The network node of claim 1, wherein said transcaling module is operable to generate said new scalable bit stream having said new bandwidth range based on bandwidth of links to downstream devices.

 11. The network node of claim 1, wherein said new bandwidth range is a reduced bandwidth range compared to the original bandwidth range.

30 12. The network node of claim 1, wherein said new minimum bit rate of said new bandwidth range is higher than said original minimum bit rate of said original bandwidth range.

13. The network node of claim 1, wherein said new minimum bit rate of said new bandwidth range is lower than said original minimum bit rate of said original bandwidth range.

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14. The network node of claim 1, wherein a new maximum bit rate of said original scalable bit stream is lower than an original maximum bit rate of said original scalable bit stream.

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15. The network node of claim 1, wherein said original scalable bit stream has an original base layer and an original enhancement layer, and said transcaling module is operable to generate a new base layer and a new enhancement layer based on said original base layer and said original enhancement layer.

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16. The network node of claim 1, wherein said original scalable bit stream has an original enhancement layer, and said transcaling module is operable to decode a portion of said original enhancement layer for one picture and predict a next picture based on said decoded portion.

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17. A propagating wave for transmission of a new scalable bit stream comprising:

a base layer; and

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a plurality of new enhancement layers covering a new bandwidth range, wherein said new bandwidth range has a new minimum bit rate compared to an original minimum bit rate of an original bandwidth range of a plurality of original enhancement layers of an original scalable bit stream upon which said new bit stream is based.

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18. The propagating wave of claim 15, wherein said new bandwidth range is further defined as a reduced bandwidth range.

19. The propagating wave of claim 15, wherein said new minimum bit rate is further defined as a higher bit rate than said original minimum bit rate.

20. The propagating wave of claim 15, wherein said base layer is further defined as a new base layer constructed from said original base layer and said plurality of original enhancement layers.

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21. The propagating wave of claim 15, wherein said base layer is further defined as the original base layer, and wherein said new enhancement layers comprise a partially decoded portion of said plurality of original enhancement layers for a picture and a predicted next picture based on said decoded portion.

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22. A transcaling system, comprising:
an input module operable to receive an original scalable bit stream having an original bandwidth range;

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a decoder operable to decode at least a portion of the original bit stream;

and

an encoder operable generate a new scalable bit stream by encoding a decoded portion of the original scalable bit stream.

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23. The system of claim 20, comprising an output module operable to communicate the new scalable bit stream to a device.

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24. The system of claim 21, wherein said output module is operable to communicate a base layer of the original scalable bit stream to the device if a bandwidth of a link to the device is low.

25. the system of claim 21, wherein said output module is operable to communicate said original scalable bit stream to the device if an amount of processing power available to said encoder and decoder is low.

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26. The system of claim 20, comprising a processing power evaluation module operable to determine an amount of processing power available to said encoder and said decoder.

27. The system of claim 24, wherein said decoder is operable to decode the original scalable bit stream based on the amount of available processing power.

5 28. The system of claim 24, wherein said encoder is operable to encode the new scalable bit stream based on the amount of available processing power.

29. The system of claim 20, wherein said new bandwidth range is further defined as a reduced bandwidth range.

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30. The system of claim 20, wherein said new bandwidth range is based on analysis of a communications link with said device.

31. The system of claim 20, wherein said transcaling module is further operable to generate said new scalable bit stream based on processing power available to said transcalar.

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32. The system of claim 20, wherein a new minimum bit rate of said new bandwidth range is higher than an original minimum bit rate of said original scalable bit stream.

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33. The system of claim 20, wherein said original scalable bit stream has an original base layer and an original enhancement layer, said decoder is operable to reconstruct original media from said original base layer and original enhancement layer, and said encoder is operable to generate a new base layer and a new enhancement layer based on said reconstructed media.

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34. The system of claim 20, wherein said original scalable bit stream has an original enhancement layer, said decoder is operable to decode a portion of said original enhancement layer, and said encoder is operable to predict a next portion based on said decoded portion.

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35. The system of claim 32, wherein the original scalable bit stream has a base layer, and wherein said encoder is operable to use motion vectors of said original base layer to predict the next portion.

5 36. A transcaling method comprising:
 receiving an original scalable bit stream having an original minimum bit
rate over a communications network;
 determining a new minimum bit rate; and
 generating a new scalable bit stream based on the original scalable bit
10 stream and the determined new minimum bit rate.

 37. The method of claim 34, wherein said receiving an original scalable bit
stream comprises receiving an original scalable bit stream having an original base layer
and an original enhancement layer.

15 38. The method of claim 35, wherein said generating a new scalable bit
stream comprises generating a new base layer and a new enhancement layer based on
said original base layer and said original enhancement layer.

20 39. The method of claim 35, wherein said generating a new scalable bit
stream comprises:
 decoding a portion of said original enhancement layer for one picture; and
 predicting a next picture based on said decoded portion.

25 40. The method of claim 34 further comprising analyzing links of devices
connected to said communications network, wherein said determining a new minimum
bit rate is further based on said analyzed links.

 41. The method of claim 34, wherein said determining a new minimum bit
30 rate comprises determining a new minimum bit rate that is higher than said original
minimum bit rate, and wherein said generating a new scalable bit stream comprises
generating a new scalable bit stream having the new minimum bit rate.

42. The method of claim 34, wherein said determining a new minimum bit rate comprises determining a new minimum bit rate that is lower than said original minimum bit rate, and wherein said generating a new scalable bit stream comprises
- 5 generating a new scalable bit stream having the new minimum bit rate.